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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,008	02/08/2002	Hitotoshi Kimura	Q68459	6420

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2100 Pennsylvania Avenue, NW
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EXAMINER

VO, ANH T N

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

12

Office Action Summary

Application No.

10/068,008

Applicant(s)

KIMURA ET AL.

Examiner

Anh t.n Vo

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2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 45 and 82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18, 45 and 82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Final Rejections

Claim Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4-7, 10, and 13-14 are rejected under 35 USC 102 (e) as being anticipated by VanSteenkiste (U.S. Pat. 6,281,916).

VanSteenkiste discloses in Figures 3-4 an ink supply system comprising:

- a main tank (12), which stores ink therein;
- a plurality of sub tanks (18, 20, 22, 24), communicated with said main tank (12), each sub tank (18) storing ink supplied from said main tank (12), and being communicated with at least one recording head (40);
- a first ink amount detector (210) which detects an ink amount stored in each sub tank (18);
- a first supply amount controller (110, 250), which controls a supply amount of ink flowing into said at least one sub tank, based on a detection of the first ink amount detector.
- wherein the first supply amount controller (110, 250) is provided as a first valve member (110);

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- wherein the first valve member (110) is opened when the first ink amount detector (210) detects an ink low state in which the ink amount stored in the at least one subtank (18) is at a first predetermined level or less; and
- the first valve member (110) is closed when the first ink amount detector detects an ink full state in which the ink amount stored in the at least one subtank is at a second predetermined level or more;
- a second supply amount controller (112, 252), which controls a supply amount of ink flowing out of the main tank (12); and
- wherein the second supply amount controller is provided as a second valve member (112).

Claims 1, 3 and 9 are rejected under 35 USC 102 (e) as being anticipated by Bode (U.S. Pat. 6,196,668).

Bode discloses in Figures 1-4 an ink supply system comprising:

- a main tank (24), which stores ink therein;
- a plurality of subtanks (22A-22D), communicated with said main tank (24), each subtank (22A) storing ink supplied from said main tank (24), and being communicated with at least one recording head (12A);
- wherein the subtanks (22A-22D) are arranged in a vertical direction (Figure 3);
- wherein main tank (24) and the subtanks (22A-22D) are arranged so as to provide a head difference (12A-12D) therebetween, to supply ink from the main ink tank (24) to the subtanks (22A-22B); and
- a plurality of recording heads (212A-12B), communicated with said main tank (24) while providing a head difference therebetween.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-18, 45 and 82 are rejected under 35 USC 103 (a) as being unpatentable over Junya (EP Pat. 0965451A2) in view of VanSteenkiste (US Pat. 6,281,916), Uzita (US Pat. 5,221,935), and Hmelar et al. (US Pat. 6,151,039).

Junya discloses in Figures 1-17 an ink jet printer comprising:

- at least one main tank (134) which stores ink therein (Figure 9);
- a plurality of subtanks (50), communicated with each main tank (134), each subtank storing ink supplied from the main tank, and being communicated with at least one recording head (1) (Figure 9, page 10, lines 31-32);
- wherein a plurality of main tanks (134K, 134Y, 134M, 134C) are provided;
- wherein the subtanks (50K, 50Y, 50M, 50C) are arranged in a vertical direction (Figure 9);
- wherein each subtank (50b) is airtightly formed by a material having flexibility so that a volume of the subtank is variable;
- a first ink amount detector (50e) which detects an ink amount stored in each subtank (50) (Figure 2);
- a first supply amount controller (66) which controls a supply amount of ink flowing into each subtank (50), based on the detection of the first ink amount detector (50e) (Figure 2);
- wherein the first supply amount controller (66) is provided as a first valve member.
- the first valve member (66) is opened when the first ink amount detector (50e) detects an ink low state in which the ink amount stored in the subtank (50b) is a first predetermined level or less (Figure 2);
- the first valve member (66) is closed when the first ink amount detector (50e) detects an ink full state in which the ink amount stored in the subtank is a second predetermined level or more (Figure 2);
- the subtank is communicated with a plurality of recording heads.

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- the main tank and the sub tanks are arranged so as to provide a head difference therebetween, to supply ink from the main tank to the sub tanks (Figures 2 and 10);
- the main tank (134) is compressed to supply ink to the sub tanks (50) (Figures 2 and 9);
- wherein the main tank (134) is compressed by a pump member (44) (Figure 9);
- wherein the pump member (44) is connected to the main tank (134) via an air releaser (42) which opens the main tank (134) to atmosphere (Figure 9);
- a second supply amount controller (49), which controls a supply amount ink flowing out of the main tank (134) (Figure 9);
- wherein the second supply amount controller (49) is provided as a second valve member;
- the second valve member (49) is first opened while the main tank (134) is compressed, and then the first valve member (51) is opened to supply ink to the sub tank (Figure 9); and
- wherein the first valve member (51) is first closed and the compressing of the main tank (134) is canceled when the sub tank is replenished, and the second valve member (49) is then closed (Figure 9).

However, Junya does not disclose the ink jet printer comprising a plurality of sub tanks, communicated with said at least one main tank, each sub tank storing ink supplied from said at least one main tank, and being communicated with at least one recording head; wherein at least one of said sub tanks is communicated with a plurality of recording heads; each sub tank contains a plate member which prevents inner surfaces of the sub tank from being adhered with each other; wherein grooves are formed on surfaces of the plate member; comprising a memory for storing a residual ink amount in the main tank; and grooves are formed on surfaces of the plate member.

Nevertheless, VanSteenkiste discloses in Figures 3-4 an ink supply system comprising:

- a main tank (12), which stores ink therein; and
- a plurality of sub tanks (18, 20, 22, 24), communicated with said main tank (12), each sub tank (18) storing ink supplied from said main tank (12), and being communicated with at least one recording head (40).

Furthermore, Uzita discloses in Figures 8-10 an ink jet printer comprising an ink tank (3) contains a plate member (two unmarked rod elements) which prevents inner surfaces of the ink tank (3) from being adhered with each other.

Additionally, Hmelar et al. disclose in Figures 2 and 4 an ink container (110) comprising a memory for storing a residual ink amount in the ink tank (column 4, lines 51-65).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of VanSteenkiste, Uzita et al., and Hmelar in the Junya ink jet printer for the purpose of performing a large amount of printing, preventing the inner surfaces of the ink tank adhering each other, and determining a remained ink amount in the ink container.

Junya in view of Uzita et al. disclose the claimed invention except for “grooves are formed on surfaces of the plate member”. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select changes in the shape of the plate member for the purpose of preventing the inner surfaces of the ink container adhering each other, since it is a mechanical design expedient for an engineer depending upon a particular environment and the applications in which the ink jet cartridge is to be used. In re Daily, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). See MPEP 2144.04.

Response to Applicant's Arguments

The applicant's arguments with respect to the prior art rejection have been carefully considered and have been traversed in view of the new grounds of rejection over VanSteenkiste and Bode references.

CONCLUSION

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 8:30 A.M. to 6:30 P.M.. The fax number of this Group 2861 is (703) 872-9306.



ANH T.N. VO
PRIMARY EXAMINER

June 20, 2004